

# Graphing Lines

"slope-intercept form"

$$y = Mx + b$$

slope

$$f(x) = Mx + b$$

y-intercept  
where  $x = 0$

$$\frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{\Delta y}{\Delta x}$$

When graphing,  $b$  is where you begin  $(0, b)$   
and  $M$  is how you move up/down and left/right  
from point to point

## \* Transformations

If  $0 < |M| < 1$ , the line is flatter than  $f(x) = x$   
parent function  
Ex:  $M = \frac{1}{4}, \frac{2}{5}, -\frac{2}{3}$

If  $|M| > 1$ , the line is steeper than  $f(x) = x$   
parent function  
Ex:  $2, -5, \frac{7}{2}$

If  $M < 0$  (is negative), the line is a  
reflection of  $f(x) = x$

If  $b > 0$ , shift up  
If  $b < 0$ , shift down  
(vertical translation)

## Practice with Transformations

Ex 1:  $y = \frac{4}{5}x + 2$

flatter

shift up 2

Ex 2:  $y = 5x - 3$

$5 > 1$   
steeper

shift down 3

Ex 3:  $y = -\frac{1}{3}x + 7$

reflected

flatter

shift up 7

Ex 4:  $y = -\frac{5}{3}x - 1$

reflected

steeper

shift down 1